SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE USE OF AN ABSORBENT PULPIT IN THE CULTIVATION OF AEROBIC ORGANISMS

THE method described has been applied especially to fungi in an attempt to study their aerobic tendencies. The fungi chosen were members of a group which had proven pathogenic to man.

The principle of absorption was utilized as a basis in the development of this method. A good absorbent possessing neither nutrient, antiseptic, chemically or physically reactive properties is suitable. Blotting paper was chosen. A fast color is desirable, the most suitable color being dependent on the color of the organismal growth to be studied. For adaptation to test-tubes a two-legged pulpit of blotting paper with the horizontal portion above the fluid media proved satisfactory. The organism was planted on this portion and its growth observed. Some organisms grew on this portion alone, some on it and in the media and some in the media alone. Where growth occurred in both situations it often varied in marked degree both in character and extent.

The pulpit principle can also be utilized for growth in the petri dish. In this instance sufficient legs must project into the liquid media to keep the flat portion moist. Absorbent cotton placed under the flat portion may aid in this respect. It may be found necessary to support the moist absorbent by glass rods, etc. There must be sufficient fluid media present in the bottom of the petri dish to maintain the moisture of the pulpit at all times. The pulpit may be poured as a plate with liquid media or melted solid media. The advantage in the instance of melted solid media is that a very thin layer can be applied to a pulpit colored so that the greatest of contrast can be obtained and liquid media can be added to the petri dish in sufficient amount so that through the absorbent the solid media will be kept moist.

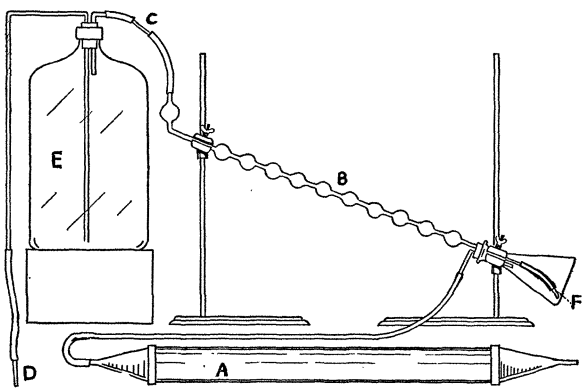
Trials of the principle in the test-tube and petri dish gave greater promise of application in the former. Bacteria tried (*B. subtilis, Staphylococcus aureus, B. coli*) showed scant growth on the pulpit and prolific growth in the media, while fungi (*trichophyton interdigitale, epidermophyton inguinale*) grew well on the seat.

There are numerous advantages of the pulpit. Growths which because of their aerobic tendencies would be inhibited or destroyed by sinking in a liquid media can be prevented from doing so. The type of growth on the pulpit, its legs and in the media can be observed. The site of growth can be observed. Growths have been carried on the pulpits for over two months and have shown no tendency to dry out. In a control on Sabourand's proof media there has been drying. It is necessary to test the absorbent used and assure oneself that it is innoxious.

JOHN W. WILLIAMS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

AN APPARATUS FOR THE MEASUREMENT OF RESPIRATORY RATE

THE apparatus shown in the figure was found very useful in measuring changes in the respiratory rate of raspberry canes held at different temperatures. The carbon dioxide evolved by the canes was absorbed with tenth normal barium hydroxide. Unneutralized barium hydroxide was titrated with tenth normal hydrochloric acid. The respiration chamber (A) is of galvanized iron and has removable ends, which were sealed with paraffine. Any type of respiration chamber may be used.



The absorption tube (B) was blown from 8 mm glass tubing. A tube of this size holds 25 ml of liquid. The glass tube (F) has a 4 mm bore. The capillary tube (C) causes air to flow through the absorption tube at an even rate. The bore of this tube, which is small, also determines the rate of air flow. The rate at which water is siphoned from the aspirator bottle (E) is controlled by the capillary tube (D). If the aspirator bottle is filled before making a determination, the same quantity of air is always drawn through the apparatus in a given time.

The apparatus was used successfully at freezing temperatures by filling the aspirator bottle with a denatured alcohol solution, and adding 95 per cent ethyl alcohol to the barium hydroxide in the absorption tube.

R. H. LANDON
W. G. BRIERLEY
UNIVERSITY OF MINNESOTA